#6



```
TatA(Eco)    M-GGISIWQLLIIAVIVVLLFGTKKLG------------------------------ 26
TatE(Eco)    M-GEISITKLLVVAALVVLLFGTKKLR------------------------------ 26
TatAy(Bsu)   M--PIGPGSLAVIAIVALIIFGPKKLP------------------------------ 25
TatAd(Bsu)   MFSNIGIPGLILIFVIAIIIFGPSKLP------------------------------ 27
TatAc(Bsu)   M--ELSFTKILVILFVGFLVFGPDKLP------------------------------ 25
TatB (Eco)   MF-DIGFSELLLVFIIGLVVLGPQRLPVAVKTVAGWIRALRSLATTVQNELTQELKLQ 49
             *   ..   . ..  .  ...*. .*

TatA(Eco)    ---------------SIGSDLGASIKGFKKAMSDDE----PKQDKTSQDADFTAKTI  64
TatE(Eco)    ---------------TLGGDLGAAIKGFKKAMNDDD----A-AAKKGADVDLQAEKL  63
TatAy(Bsu)   ---------------ELGKAAGDTLREFKNATKGLT----SDEEEKKKEDQ------  57
TatAd(Bsu)   ---------------EIGRAAKRTLLEFKSATKSLV----SGDEKEEKSAELTAVK-  64
TatAc(Bsu)   ---------------ALGRAAGKALSEFKQATSGLT----QDIRKNDSEN-----K-  57
TatB (Eco)   EFQDSLKKVEKASLTNLTPELKASMDELRQAAESMKRSYVANDPEKASDEAHTIHNP 114
                          ... .   .. ... * ..          ..  .

TatA(Eco)    ADKQADTNQE-------------------------------QAKTEDAKRHDKEQV  89
TatE(Eco)    SHKE---------------------------------------------------  67
TatAy(Bsu)   ---------------------------------------------------------  57
TatAd(Bsu)   -----------------------------------------------------QDKNAG  70
TatAc(Bsu)   ----------------------------------------------------EDKQM-  62
TatB (Eco)   VVKDNEAAHEGVTPAAAQTQASSPEQKPETTPEPVVKPAADAEPKTAAPSPSSSDKP 171
```

# FIG._1A

```
TatC (Eco)   MSVEDTQ--PLITHLIELRKRLLNCIIAVIVIFLCLVYFANDIYH-LVSAPLIK     51
TatCy (Bsu)  MTRMKVNQMSLLEHIAELRKRLLIVALAFVVFFIAGFFLAKPIIVYLQETDEAK     50
TatCd (Bsu)  MDKKETH---LIGHLEELRRRIIVTLAAFFLFLITAFLFVQDIYDWLIRDLDGK     51
             *.  ...   *..*. ***.*..    *  ....    ... *   *  .   *

TatC (Eco)   QLPQGSTMIATDVASPFFTPIKLTFMVSLILSAPVILYQVWAFIAPALYKHERR    105
TatCy (Bsu)  QL----TLNAFNLTDPLYVFMQFAFIIGIVLTSPVILYQLWAFVSPGLYEKERK    104
TatCd (Bsu)  -------LAVLGPSEILWVYMMLSGICAIAASIPVAAYQLWRFVAPALTKTERK     98
                   . . . .. ... . .. . ..  . **  **.* *..*.* . **.

TatC (Eco)   LVVPLLV---SSSLLFYIGMAFAYFVVFPLAFGFLANTAPE-GVQVSTDIASYL    155
TatCy (Bsu)  VTLSYI---PVSILLFLAGLSFSYYILFPFVVDFMKRISQDLNVNQVIGINEYF    155
TatCd (Bsu)  VTIMYIMYIPGLFALFLAGISFGYFVLFPIVLSFLTHLSSG-HFETMFTADRYF    151
             ...  .        **  *..*.*...**.. .*. . . . .   . .   *.

TatC (Eco)   SFVMALFMAFGVSFEVPVAIVLLCWMGITSPEDLRKKRPYVLVGAFVVGMLLTP    209
TatCy (Bsu)  HFLLQLTIPFGLLFQMPVILMFLTRLGIVTPMFLAKIRKYAYFTLLVIAALITP    209
TatCd (Bsu)  RFMVNLSLPFGFLFEMPLVVMFLTRLGILNPYRLAKARKLSYFLLIVVSILITP    205
              *...* ..**  *..*. ...* ..** .* * * *       .*..  *.**

TatC (Eco)   PDVFSQTLLAIPMYCLFEIGVFFSRF-YVGKGRNREEENDAEAESEKTEE        258
TatCy(Bsu)   PELLSHMMVTVPLLILYEISILISKAAYRKAQKSSAADRDVSSG-----Q        254
TatCd(Bsu)   PDFISDFLVMIPLLVLFEVSVTLSAFVYKKRMRE-----ETAAA-----A        245
             *. .*. .. .*.  *.*... .*   *    ..     .....     .
```

# FIG._1B

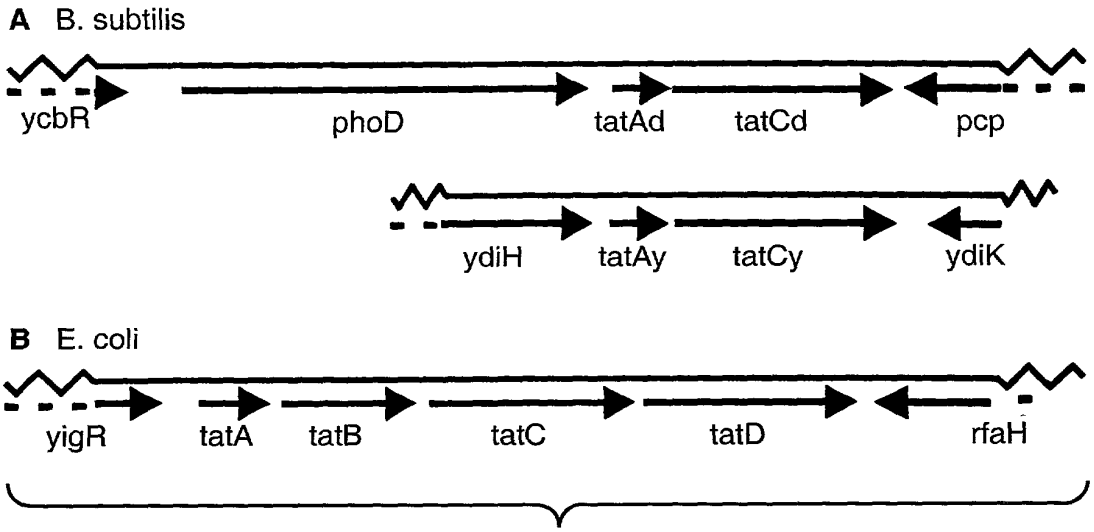
A B. subtilis
ycbR
phoD
tatAd
tatCd
pcp
ydiH
tatAy
tatCy
ydiK
B E. coli
yigR
tatA
tatB
tatC
tatD
rfaH

FIG._2

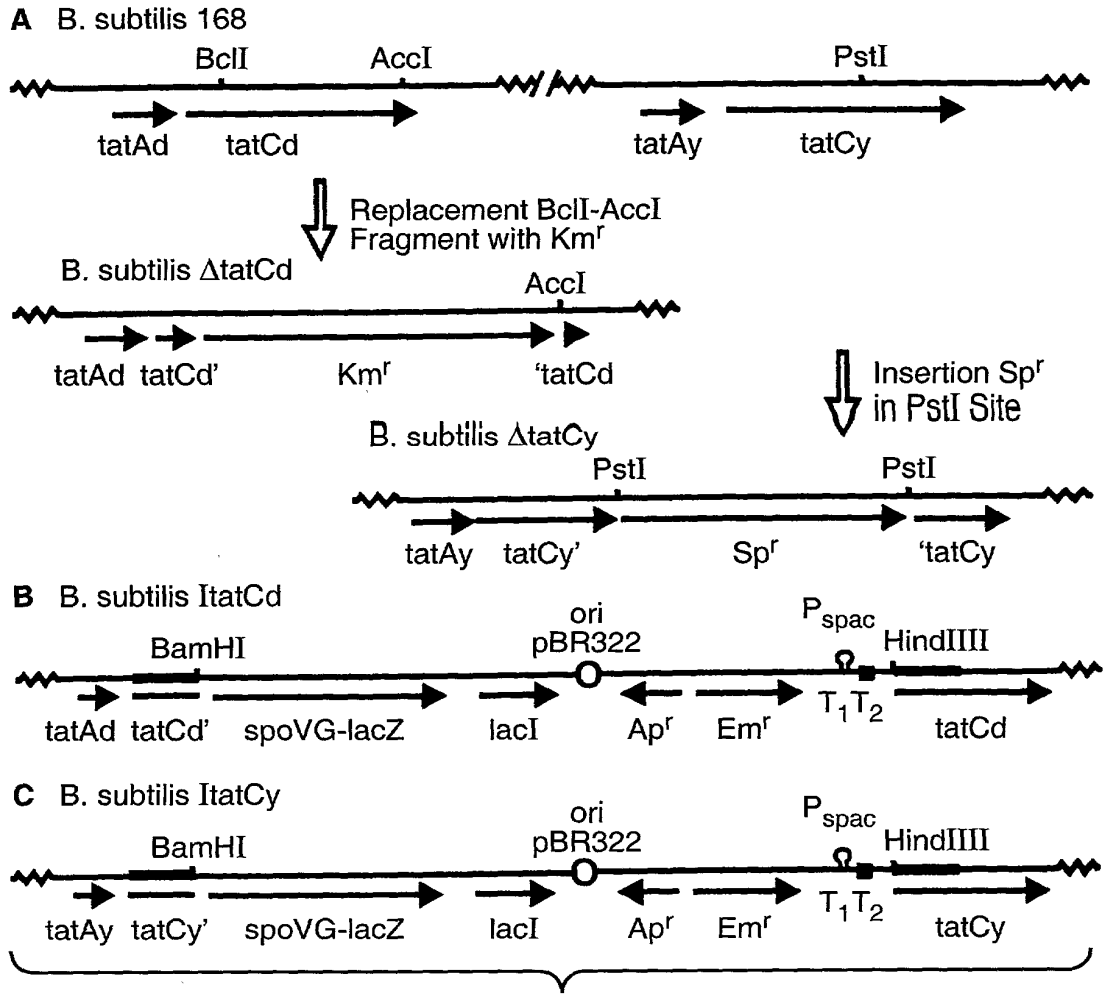
A B. subtilis 168
BclI
AccI
PstI
tatAd
tatCd
tatAy
tatCy
Replacement BclI-AccI
Fragment with Km^r
B. subtilis ΔtatCd
AccI
tatAd tatCd'
Km^r
'tatCd
Insertion Sp^r
in PstI Site
B. subtilis ΔtatCy
PstI
PstI
tatAy tatCy'
Sp^r
'tatCy
B B. subtilis ItatCd
ori
pBR322
P_spac
BamHI
HindIIII
tatAd tatCd' spoVG-lacZ
lacI
Ap^r
Em^r
T1T2
tatCd
C B. subtilis ItatCy
ori
pBR322
P_spac
BamHI
HindIIII
tatAy tatCy' spoVG-lacZ
lacI
Ap^r
Em^r
T1T2
tatCy

FIG._3

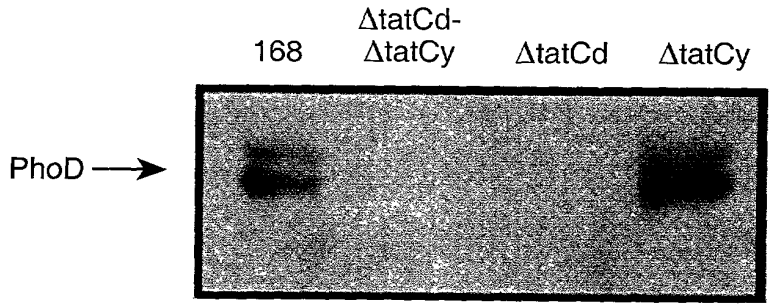


FIG._4A

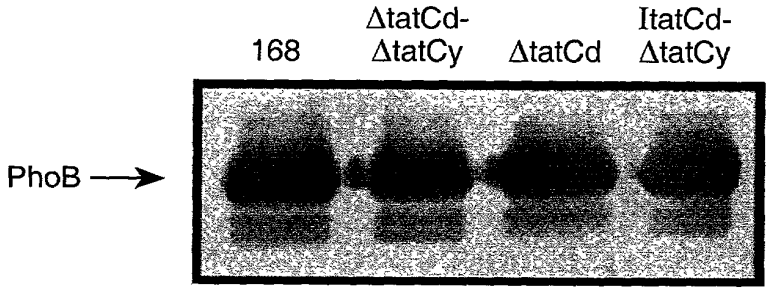


FIG._4B

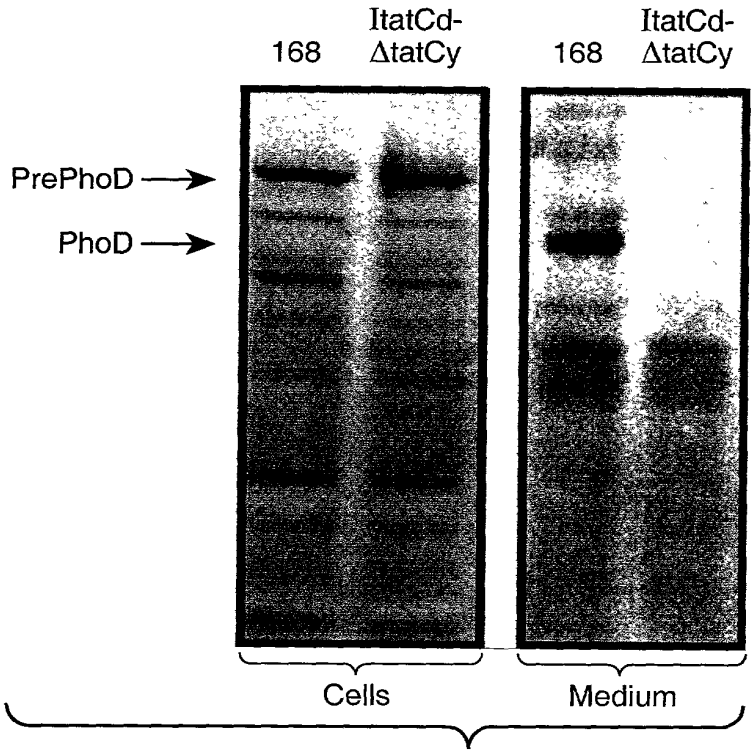


FIG._4C

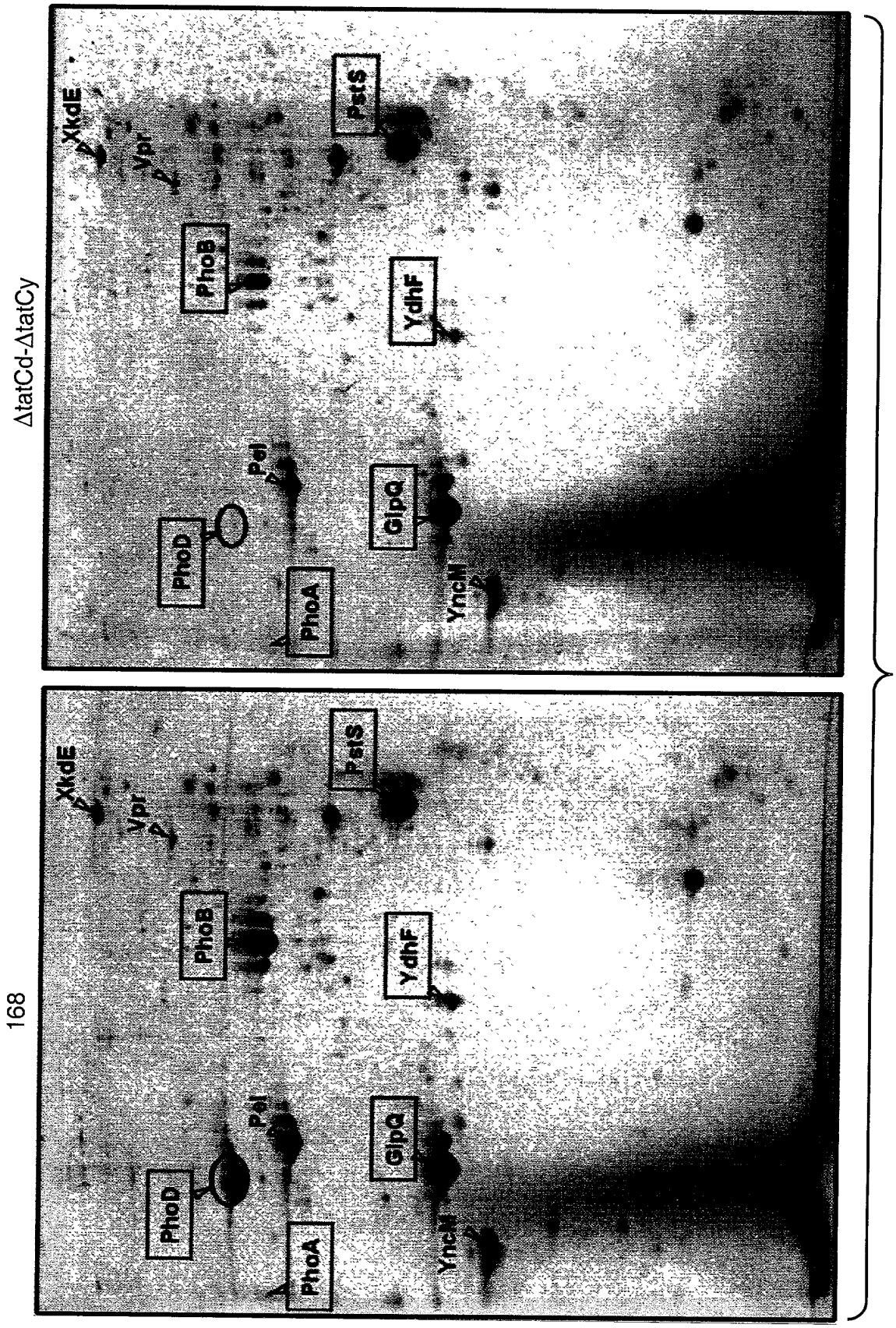
ΔtatCd-ΔtatCy
XkdE
Ypr
PstS
PhoB
YdhF
PhoD
Pel
GlpQ
PhoA
YncM
168

FIG._5

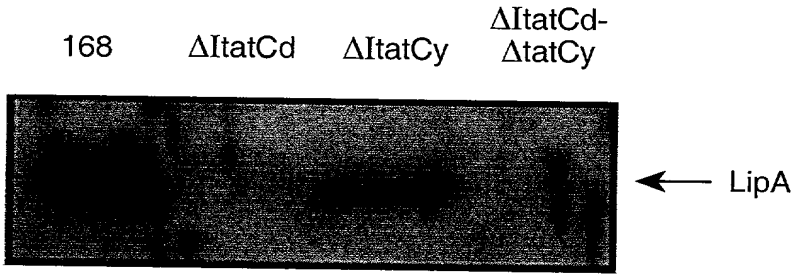


FIG._6

| Protein | N | h | RR-Motif | H | h | C |
|---|---|---|---|---|---|---|
| AlbB | 1 | 0.1 | RRILL | 27 | 2.0 | AIA |
| AmyX ™ | 9 | -0.8 | RRSFE | 15 | 1.1 | - |
| AppB ™ | 8 | 0.5 | RRTLM | 19 | 2.3 | - |
| LipA | 7 | -1.1 | RRIIA | 19 | 1.2 | AKA |
| OppB ™ | 8 | -0.6 | RRLVY | 24 | 2.0 | - |
| PbpX | 2 | -2.2 | RRRKL | 14 | 2.9 | WNA |
| PhoD | 3 | -1.3 | RRKFI | 17 | 0.9 | VGA |
| QcrA ™ | 1 | -1.1 | RRQFL | 19 | 1.3 | - |
| TlpA ™ | 1 | -0.8 | RRLII | 21 | 2.4 | - |
| WapA ™ | 1 | -3.0 | RRNFK | 18 | 2.3 | VLA |
| WprA | 8 | -1.7 | RRKFS | 20 | 1.9 | AAA |
| YceA ™ | 1 | -0.4 | RRAFL | 21 | 2.2 | - |
| YesM ™ | 1 | -1.5 | RRMKI | 20 | 2.4 | QYA |
| YesW | 1 | -1.3 | RRSCL | 19 | 2.0 | VKA |
| YfkN ™ | 1 | -1.2 | RRTHV | 17 | 1.7 | IHA |
| YkpC | 8 | -1.0 | RRVAI | 17 | 2.3 | SLA |
| YkuE | 1 | -1.3 | RRQFL | 17 | 1.0 | GYA |
| YmaC | 7 | 0.0 | RRFLL | 15 | 2.4 | YSL |
| YubF ™ | 9 | -2.7 | RRNTV | 23 | 2.0 | - |
| YuiC | 8 | 0.2 | RRLLM | 20 | 1.9 | IEA |
| YvhJ ™ | 2 | -1.7 | RRKIL | 18 | 2.5 | - |
| YwbN | 1 | -1.8 | RRDIL | 23 | 1.4 | QTA |

FIG._7

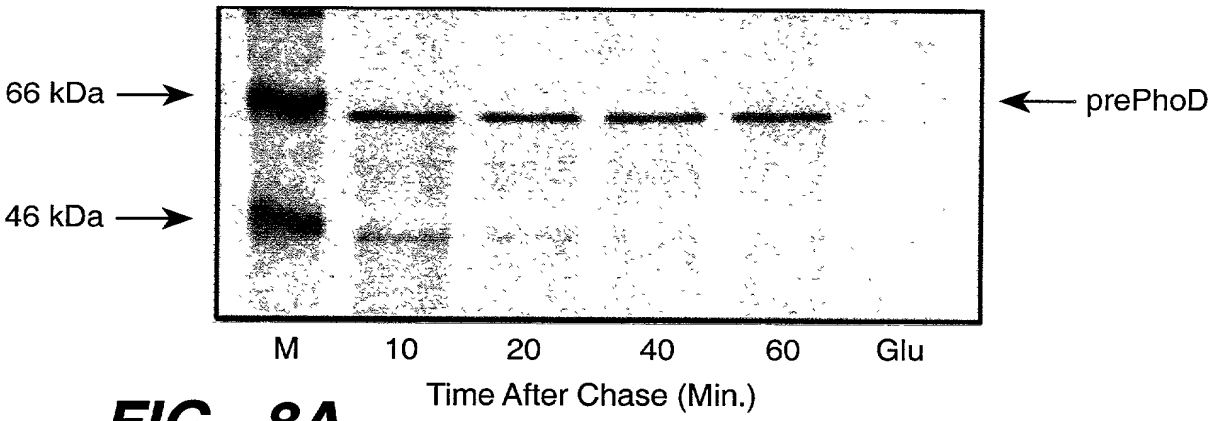
66 kDa
46 kDa
prePhoD
M
10
20
40
60
Glu
Time After Chase (Min.)

FIG._8A

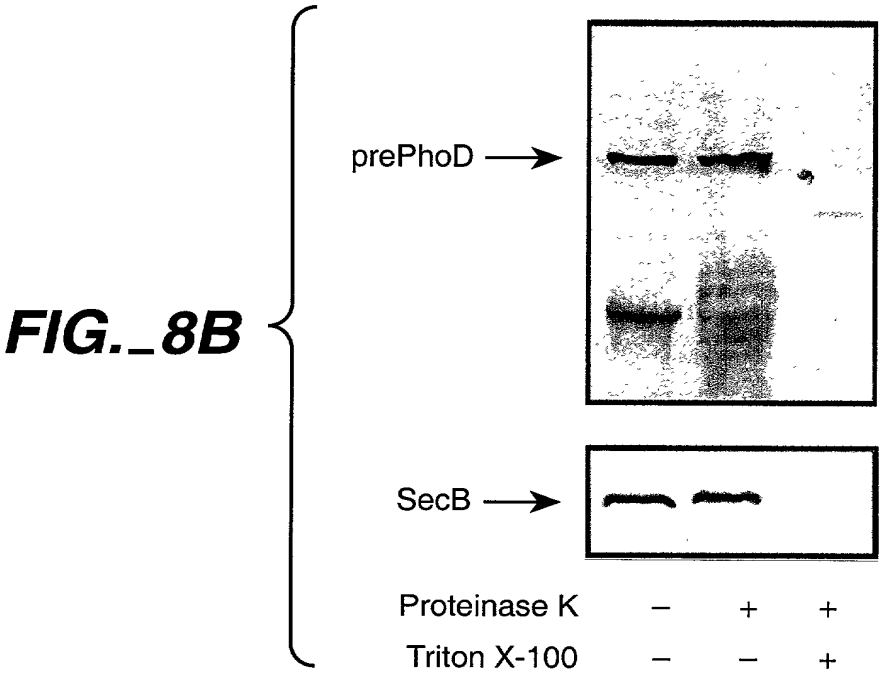
prePhoD
SecB
Proteinase K – + +
Triton X-100 – – +

FIG._8B

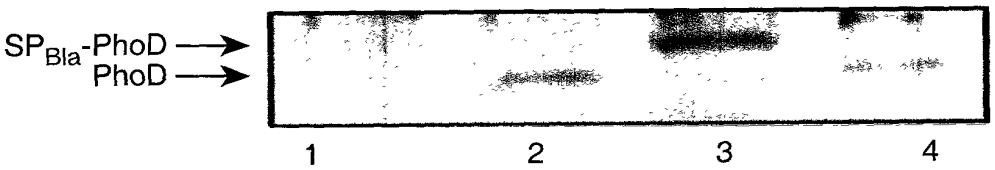


FIG._9A

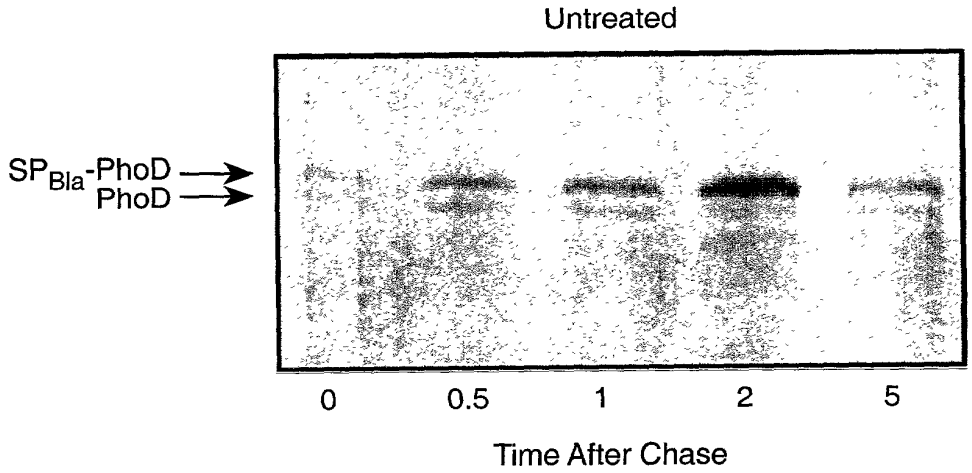


FIG._9B

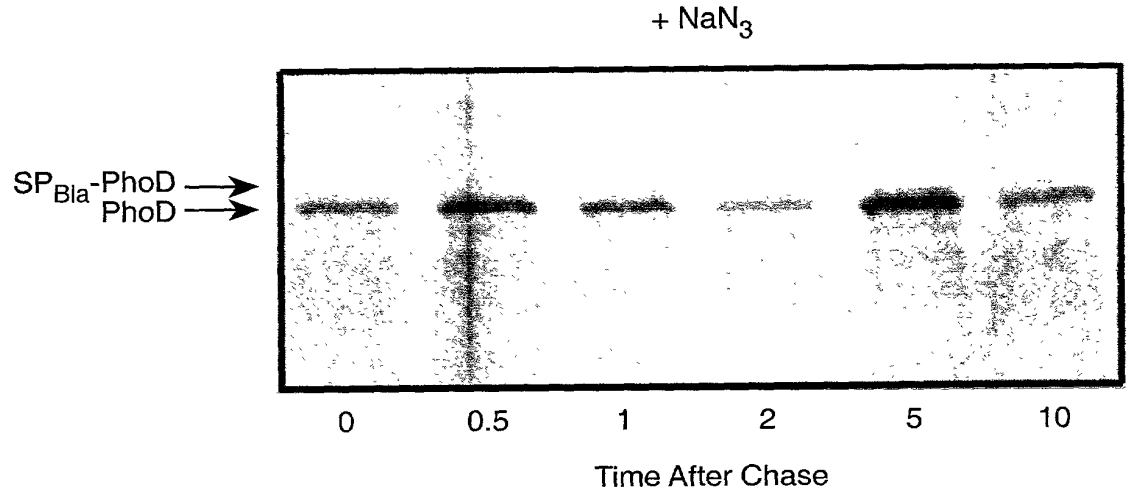


FIG._9C

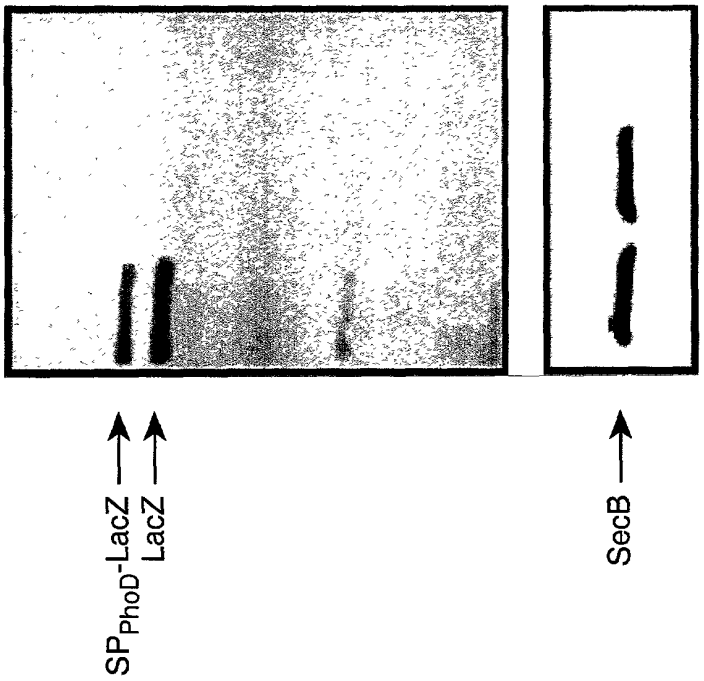


FIG._10B

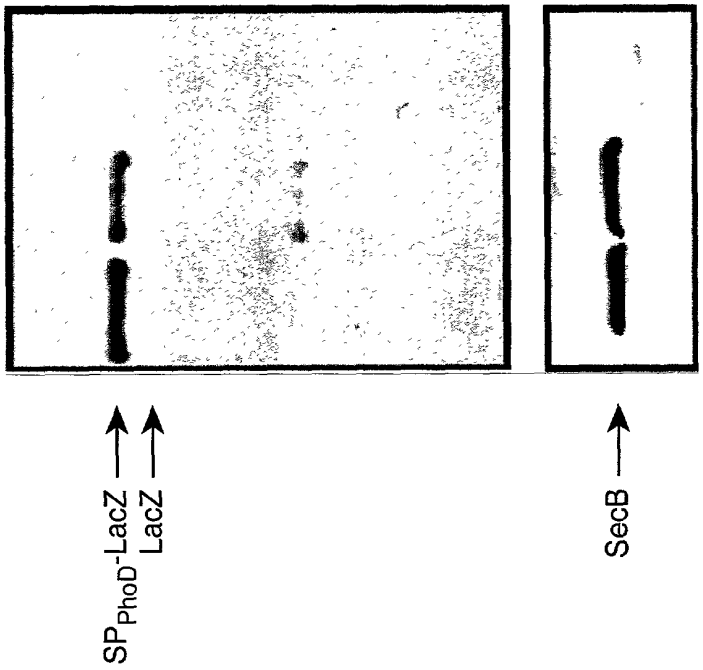


FIG._10A

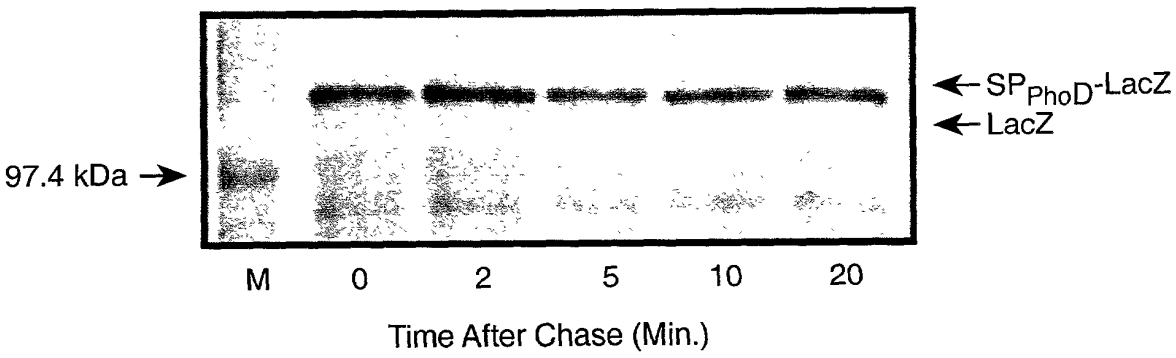


FIG._11A

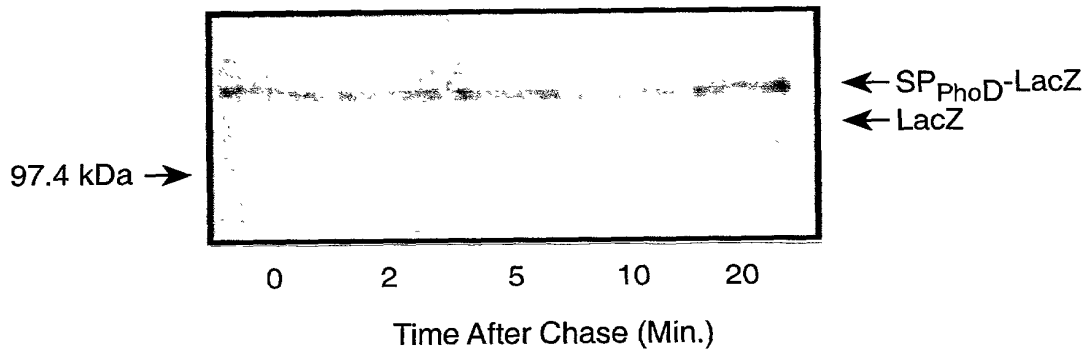


FIG._11B

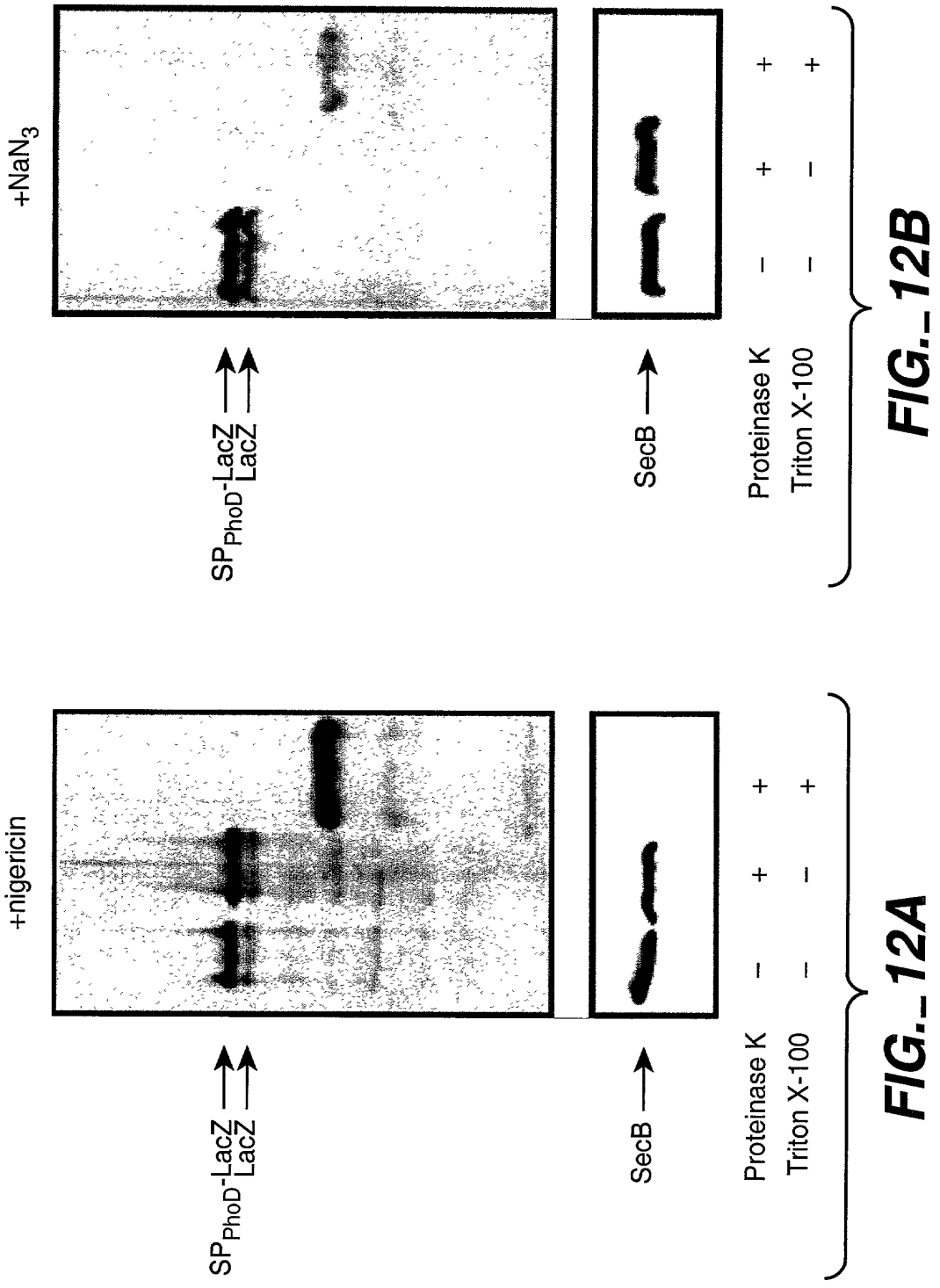


FIG._12A

FIG._12B

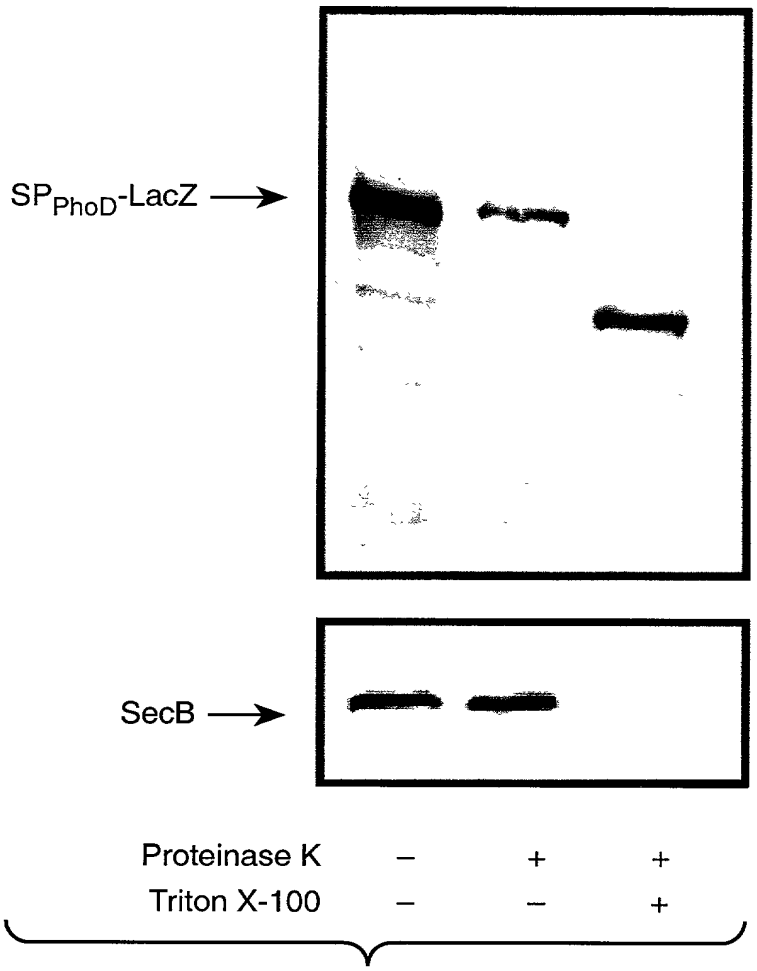


FIG._13

Homologs in B. alcalophilus

TatA

**MGGLSVGSVVLIALVALLIFGPKKLPELGKAAGSTLREFKNATK**
**GLADDDDDTKSTNVQKEKA**

TatC

**MTMMTPNQQTSKKKKRKGRKGRVPMQDMSIMDHAEELRRRIF**
**VVLAFFIVALIGGFFLAVPVITFLQNSPQAADMPFNAFRLTDPLRV**
**YMNFAVITALVLIIPVILYQLWAFVSPGLKENEQKATLAYIPIAFL**
**LFLAGIAFSYFILLPFVISFMGQMADRLEINEMYGINEYFSFLFQL**
**TIPFGLLFQLPVVVMFLTRLGVVTPTFLRKIRKYAYFALLVIAGII**
**TPPELTSHLFVTVPMLILYEISITISAITYRKYHGTTDHNGQESAK**

FIG._14